Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-479

Combat Rescue Helicopter (CRH)

As of FY 2019 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

This document contains information that may be exempt from mandatory disclosure under the FOIA.

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Sensitivity Originator

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Common Acronyms and Abbreviations for MDAP Programs

Acq O&M - Acquisition-Related Operations and Maintenance
ACAT - Acquisition Category
ADM - Acquisition Decision Memorandum
APB - Acquisition Program Baseline
APPN - Appropriation
APUC - Average Procurement Unit Cost
$B - Billions of Dollars
BA - Budget Authority/Budget Activity
Blk - Block
BY - Base Year
CAPE - Cost Assessment and Program Evaluation
CARD - Cost Analysis Requirements Description
CDD - Capability Development Document
CLIN - Contract Line Item Number
CPD - Capability Production Document
CY - Calendar Year
DAB - Defense Acquisition Board
DAE - Defense Acquisition Executive
DAMIR - Defense Acquisition Management Information Retrieval
DoD - Department of Defense
DSN - Defense Switched Network
EMD - Engineering and Manufacturing Development
EVM - Earned Value Management
FOC - Full Operational Capability
FMS - Foreign Military Sales
FRP - Full Rate Production
FY - Fiscal Year
FYDP - Future Years Defense Program
ICE - Independent Cost Estimate
IOC - Initial Operational Capability
Inc - Increment
JROC - Joint Requirements Oversight Council
$K - Thousands of Dollars
KPP - Key Performance Parameter
LRIP - Low Rate Initial Production
$M - Millions of Dollars
MDA - Milestone Decision Authority
MDAP - Major Defense Acquisition Program
MILCON - Military Construction
N/A - Not Applicable
O&M - Operations and Maintenance
ORD - Operational Requirements Document
OSD - Office of the Secretary of Defense
O&S - Operating and Support
PAUC - Program Acquisition Unit Cost

PB - President's Budget
PE - Program Element
PEO - Program Executive Officer
PM - Program Manager
POE - Program Office Estimate
RDT&E - Research, Development, Test, and Evaluation
SAR - Selected Acquisition Report
SCP - Service Cost Position
TBD - To Be Determined
TY - Then Year
UCR - Unit Cost Reporting
U.S. - United States
USD(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)

Program Information

Program Name
Combat Rescue Helicopter (CRH)

DoD Component
Air Force

Responsible Office

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Date Assigned: September 12, 2010

References

SAR Baseline (Development Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated June 18, 2014

Approved APB

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated June 18, 2014

Mission and Description

The Combat Rescue Helicopter (CRH) system will provide Personnel Recovery (PR) forces with a vertical takeoff and landing aircraft that is quickly deployable and capable of main base and austere location operations for worldwide PR missions. CRH system activities may be required during any phase of a service/joint/coalition operation, across the full range of military operations, in any land or sea location, within the areas covered by the relevant defense planning scenarios.

The Air Force has 12 Core Functions that address its unique capabilities in support of the Joint Functional Capabilities (JFC) across the full spectrum of political and military operations in all environments. The Air Force has demonstrated its commitment to the Joint Force by making PR one of the 12 USAF Core Functions. The Air Force recognizes the inherent interdependence of PR, although established as an individual Core Function, with the other Core Functions as well as with the JFCs.

The CRH shall be capable of employment day or night, in adverse weather, and in a variety of threat spectrums from terrorist attacks to chemical, biological, radiological, and nuclear threats. A single pilot must be able to fly and operate all electronic/sensor weapons systems including countermeasures, leaving the second pilot to navigate, communicate, and manage mission execution. Onboard defensive capabilities will permit the CRH system to operate in an increased threat environment. An in-flight air refueling capability will provide an airborne alert capability and extend its combat mission range. The CRH system may conduct combat search and rescue airborne mission commander duties. The aircraft will be self-supporting to the maximum extent practical.

The CRH system may also conduct other collateral missions inherent in its capabilities to conduct PR, such as non-conventional assisted recovery, national emergency operations, civil search and rescue, international aid, emergency aero medical evacuation, disaster/humanitarian relief, counter drug activities, support for National Aeronautics and Space Administration flight operations, and insertion/extraction of combat forces.

Executive Summary

Program Highlights Since Last Report

The CRH program addresses the need to replace the Air Force aging HH-60G Pave Hawk helicopters (air vehicles, training systems, and product support) with a new system. The CRH program will replace the aging fleet by leveraging in-production air vehicles and training systems and integrating existing technologies to acquire a new system.

A single 15-year contract was awarded to Sikorsky Aircraft Corporation (SAC) on June 26, 2014. CRH is on contract to buy 112 aircraft, designated as the HH-60W. In addition to purchasing the aircraft, the contract includes development and fielding of the aircrew and maintenance training systems along with product support. The product support strategy consists of a 2-level maintenance concept (organizational and depot). During pre-operational support, the contractor will provide all levels of maintenance and material support. Field Service reps will assist the Air Force in transitioning to organic organizational maintenance. Spares and support equipment will be delivered 60 days prior to CRH fielding. The training system consists of training devices, courseware, technical data, spares and support equipment necessary to meet aircrew and maintenance training system requirements. CRH will ensure combat capability we develop, acquire, and deliver to the warfighter is affordable and supportable throughout its life cycle.

SAC continues to pursue accelerating the EMD program to achieve a 69-month Required Assets Available versus the baseline 75-month schedule. This is in alignment with the schedule incentive built into the contract.

The program has made great strides to ensure all KPP and Key System Attributes (KSA) are currently projected to be met. The team successfully conducted major supplier Critical Design Reviews (CDRs) such as the Tactical Mission Kit (TMK) held January 30 - February 3, 2017 and the Flight Management System (FMS)/ Embedded Terrain Awareness Warning System held February 27, 2017. The TMK integrates multiple sensors, data links, defensive systems, and other intelligence information sources for use by combat rescue aircrews. The FMS provides the primary means for data entry and control of all integrated navigation and communication equipment, as well as system status monitoring.

Additionally, SAC and the Government initiated a 2-week demonstration of the AN/APR-52 Radar Warning Receiver (RWR) April 29 to May 5, 2017 at the Air Force Research Laboratory's Integration Demonstration and Applications Laboratory facility. As a result, the independent Technology Readiness Assessment team reported that the RWR achieved a Technology Readiness Level of 6. This successful demonstration is a major engineering development step and allows the program to continue refining the RWR's capabilities as the program heads into its developmental and operational testing phases.

The Air Vehicle CDR was successfully held May 1-5, 2017, which was accelerated by two months. The CDR showed all KSA are currently projected to be met. The CDR also demonstrated the maturity of the design is appropriate to support proceeding with full-scale fabrication, assembly, integration, and test. Although the program's Hover KPP is managed as a risk, this is strictly due to the consequence of failure. Since aircraft weight is the greatest contributor to success or failure of this requirement, the program has established an extensive weight management program that is monitored and tracked weekly. Sufficient weight margin has been maintained through CDR and is expected to continue through initial fielding."

After Air Vehicle CDR, the program focused on the Advanced Mission Computer (AMC) Operational Flight Program agile software Integrated Design Reviews (IDR). The final IDR for System Configuration (SC) 6 was successfully held at Lockheed Martin Owego NY, August 29-31, 2017. The SC 6 will be used for first flight in October 2018 and a final SC 7 build will be integrated into the Developmental Test and Evaluation program for operational release.

Formal Air Vehicle software testing of the program's first systems build, A.0 will begin in March 2018 and complete by June 2018 in support of an October 2018 first flight. Success of meeting the A.0 schedule is predicated on the success of the TMK/AMC and FMS box-level qualification testing which is scheduled to start in January 2018.

Avionics hardware and software development and test delays are adding risk to the program. TMK/AMC and FMS box-level qualification testing has slipped driving a delay of approximately 1 month to the start of formal system-level integration

testing. Formal System Integration Lab testing is now scheduled to begin in March 2018 and complete in June 2018. This schedule still supports an on-time Test Readiness Review #1 in July 2018 for the first flight software build as well as First Flight in October 2018; however, this approach reduces the margin for error.

The CRH program obtained approval of its Airworthiness Certification Basis from the Air Force Technical Approval Authority on October 25, 2017. This Certification Basis ensures the CRH program will be able to move smoothly through the flight authorization process for the program's developmental test phase. Next step is to obtain the Military Flight Release for first flight.

A Manufacturing Readiness Assessment (MRA) was held at SAC March 15-16, 2017 to review processes and procedures. This was a pre-CDR assessment with a target Manufacturing Readiness Level (MRL) of 7. SAC met the MRL 7 criteria and in some cases met MRL 8 criteria without requiring Manufacturing Maturation plans. Additionally, eight supplier MRL 7 MRAs were conducted by joint contractor/Government teams. SAC and its subcontractors will continue to be assessed to MRL 8 in CY 2018.

Parts fabrication to support major assembly for the initial aircraft began June 2017 and EMD Aircraft 1-3 are currently in production. EMD 1-4 and the System Demonstration Test Articles 1-5 aircraft are expected to be available in time to support aircraft-level testing as scheduled.

The program successfully passed the fuel cell drop test for crashworthiness in September 2017 utilizing a lighter aluminum access fitting. This aluminum configuration will save 26 pounds on the aircraft.

The Training Systems Critical Design Review was held September 18-22, 2017, which was accelerated by 2 month. All Key Performance Parameters and Key System Attributes are currently projected to be met and the design supports proceeding to full-scale fabrication, assembly, integration, and test.

The Product Support Business Case Analysis was approved by the Product Support Steering Board on October 19, 2017 and is being staffed to the Service Acquisition Executive for approval.

CRH conducted multiple Depot Maintenance Activation Working Groups (DMAWG) in CY 2017. The DMAWG collaborated on the depot activation strategy, depot maintenance activation plan development, strategic roadmap planning, and technical data rights to support depot transition. The Government continues to work with SAC to obtain the required technical data and data rights to support depot planning.

There are no significant software-related issues with this program at this time.

History of Significant Developments Since Program Initiation

History of Significant Developments Since Program Initiation	
Date	**Significant Development Description**
March 2012	Program initiation was approved in the Material Development Decision Acquisition Decision Memorandumsigned by the Acting Under Secretary of Defense for Acquisition, Technology and Logistics USD on March 2, 2012
October 2012	A Pre-Engineering and Manufacturing Development ADM was signed October 19, 2012, approving final Request For Proposal release
June 2014	A Milestone B ADM was signed on June 18, 2014, authorizing the CRH contract award and entrance into the EMD phase
June 2014	A Fixed-Price Incentive Firm at Firm Fixed Price contract for EMD was awarded to Sikorsky Aircraft Corporation on June 26, 2014
December 2014	Integrated Baseline Review conducted; action item completion and Performance Measurement Baseline established July 31, 2015
April 2015	Air Vehicle System Requirements Review / System Functional Review (SRR/SFR) was conducted
July 2015	Training Systems SRR/SFR was conducted
August 2015	Aircrew and Maintenance System Training Plan completed
April 2016	Air Vehicle Preliminary Design Review was conducted
May 2016	USD(AT&L) ADM dated May 10, 2016, designated the CRH program an ACAT 1C
July 2016	Technology Readiness Assessment was completed
August 2016	Training Systems Preliminary Design Review was conducted
December 2016	The In-Process Review Air Force Review Board ADM was signed December 7, 2016 and approved purchase of five System Demonstration Test Article aircraft
January 2017	Tactical Mission Kit Critical Design Review was conducted
February 2017	Flight Management System and Embedded Terrain Awareness Warning System Critical Design Review was conducted
May 2017	Air Vehicle Critical Design Review was conducted
September 2017	Training Systems Critical Design Review was conducted
September 2017	The Fuel Cell Drop Test for Crashworthiness was successfully completed
October 2017	CRH obtained approval for Airworthiness Certification Basis from the Air Force Technical Approval Authority
October 2017	Product Support Business Case Analysis was approved

Threshold Breaches

APB Breaches		
Schedule		☐
Performance		☐
Cost	RDT&E	☐
	Procurement	☐
	MILCON	☑
	Acq O&M	☐
O&S Cost		☐
Unit Cost	PAUC	☐
	APUC	☐

Nunn-McCurdy Breaches		
Current UCR Baseline		
	PAUC	None
	APUC	None
Original UCR Baseline		
	PAUC	None
	APUC	None

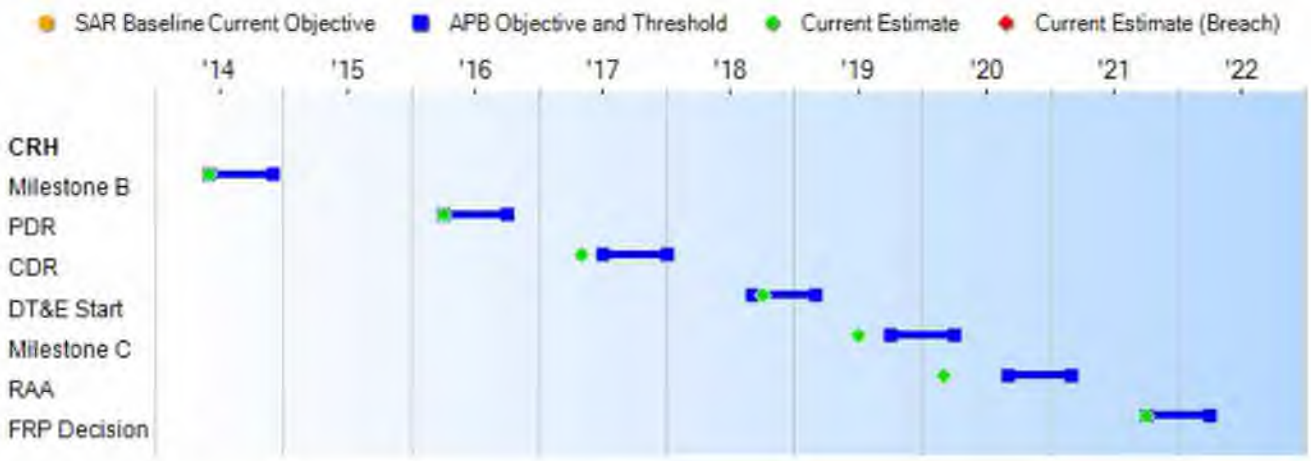
Explanation of Breach

The breach is due to multiple sites requiring increased square footage, as identified through ongoing site surveys and the Training System Critical Design Review held September 18-21 2017. Size and power requirements have increased due to the HH-60W Trainers having a larger footprint than the HH-60G trainers. Additionally, in FY 2024, Patrick Air Force Base now requires a new building due to the original targeted facility being repurposed. A Program Deviation Report has been finalized and was coordinated through Air Force PEO Intelligence, Surveillance and Reconnaissance & Special Operations Forces and The Assistant Secretary of the Air Force (Acquisition) on November 11, 2017

There is no increase in program scope or risk.

The breach will continue to be realized until re-baseline at Milestone C.

Schedule



Schedule Events					
Events	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate	
Milestone B	Jun 2014	Jun 2014	Dec 2014	Jun 2014	
PDR	Apr 2016	Apr 2016	Oct 2016	Apr 2016	
CDR	Jul 2017	Jul 2017	Jan 2018	May 2017	
DT&E Start	Sep 2018	Sep 2018	Mar 2019	Oct 2018	(Ch-1)
Milestone C	Oct 2019	Oct 2019	Apr 2020	Jul 2019	
RAA	Sep 2020	Sep 2020	Mar 2021	Mar 2020	(Ch-2)
FRP Decision	Oct 2021	Oct 2021	Apr 2022	Oct 2021	

Change Explanations

(Ch-1) The Program made the decision to move DT&E testing from September 2018 to October 2018 to align with first flight.
(Ch-2) Air Force is adjusting current estimate to the accelerated 69-month schedule as opposed to the baseline 75-month schedule moving from September 2020 to March 2020.

Notes

RAA is defined as delivery of eight production configuration aircraft (four mission & four training) with all required training devices, spares, support equipment, technical manuals, and sustainment support in place to support IOC.

Acronyms and Abbreviations

CDR - Critical Design Review
DT&E - Development Test & Evaluation
PDR - Preliminary Design Review
RAA - Required Assets Available

[redacted] Performance

Performance Characteristics			
SAR Baseline Development Estimate	Current APB Development Objective/Threshold	Demonstrated Performance	Current Estimate
(b)(3):10 USC § 130			

(b)(3):10 USC § 130

Requirements Reference

CDD for HH-60 Recapitalization Aircraft dated July 6, 2010
CDD Supplement for HH-60 Recapitalization Aircraft dated July 20, 2012

Change Explanations

None

[redacted] Notes

(b)(3):10 USC § 130

Acronyms and Abbreviations

AP - Armor Piercing
ATO - Authorization to Operate
C - Celsius
DAA - Designated Accrediting Authority
DoDAF - Department of Defense Air Force
IATO - Interim Authorization to Operate
MC - Mission Capable
mm - Millimeter
OGE - Out of Ground Effect
PA - Pressure Altitude
SCL - Standard Combat Load

Track to Budget

RDT&E

Appn	BA	PE
Air Force	3600	05	0605229F

Project	Name
654364	Combat Rescue Helicopter

Procurement

Appn	BA	PE
Air Force	3010	04	0207229F

Line Item	Name
H060WH	Combat Rescue Helicopter

MILCON

Appn	BA	PE
Air Force	3300	01	0207229F

Project	Name
VARIOUS	Combat Rescue Helicopter Simulator

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2014 $M			BY 2014 $M	TY $M		
	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate	SAR Baseline Development Estimate	Current APB Development Objective	Current Estimate
RDT&E	1958.8	1958.8	2154.7	1892.2	2118.6	2118.6	2011.3
Procurement	6108.4	6108.4	6719.2	5852.5	7708.7	7708.7	7049.9
Flyaway	--	--	--	4249.9	--	--	5121.3
Recurring	--	--	--	4221.2	--	--	5088.3
Non Recurring	--	--	--	28.7	--	--	33.0
Support	--	--	--	1602.6	--	--	1928.6
Other Support	--	--	--	1078.2	--	--	1296.0
Initial Spares	--	--	--	524.4	--	--	632.6
MILCON	23.7	23.7	26.1	36.3[1]	28.9	28.9	43.9
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	8090.9	8090.9	N/A	7781.0	9856.2	9856.2	9105.1

[1] *APB Breach*

Current APB Cost Estimate Reference

SCP dated June 18, 2014

Cost Notes

In accordance with Section 842 of the National Defense Authorization Act for FY 2017, which amended title 10 U.S.C. § 2334, the Director of Cost Assessment and Program Evaluation, and the Secretary of the military department concerned or the head of the Defense Agency concerned, must issue guidance requiring a discussion of risk, the potential impacts of risk on program costs, and approaches to mitigate risk in cost estimates for MDAPs and major subprograms. The information required by the guidance is to be reported in each SAR. This guidance is not yet available; therefore, the information on cost risk is not contained in this SAR.

Total Quantity			
Quantity	SAR Baseline Development Estimate	Current APB Development	Current Estimate
RDT&E	9	9	9
Procurement	103	103	103
Total	112	112	112

Quantity Notes

Since the last SAR, the FY 2019 PB funding update is based on revised quantities and accelerated phasing from FY 2020 to FY 2019.

Cost and Funding

Funding Summary

Appropriation Summary									
FY 2019 President's Budget / December 2017 SAR (TY$ M)									
Appropriation	Prior	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	To Complete	Total
RDT&E	886.0	354.5	457.7	232.0	37.7	21.5	21.9	0.0	2011.3
Procurement	0.0	0.0	680.2	909.0	1014.8	876.3	847.4	2722.2	7049.9
MILCON	7.3	0.0	5.9	0.0	4.1	0.0	0.0	26.6	43.9
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2019 Total	893.3	354.5	1143.8	1141.0	1056.6	897.8	869.3	2748.8	9105.1
PB 2018 Total	903.3	354.5	553.8	856.9	955.4	953.2	1051.5	4260.9	9889.5
Delta	-10.0	0.0	590.0	284.1	101.2	-55.4	-182.2	-1512.1	-784.4

Quantity Summary										
FY 2019 President's Budget / December 2017 SAR (TY$ M)										
Quantity	Undistributed	Prior	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	To Complete	Total
Development	9	0	0	0	0	0	0	0	0	9
Production	0	0	0	10	12	16	13	12	40	103
PB 2019 Total	9	0	0	10	12	16	13	12	40	112
PB 2018 Total	9	0	0	0	8	10	14	14	57	112
Delta	0	0	0	10	4	6	-1	-2	-17	0

Cost and Funding

Annual Funding By Appropriation

Annual Funding 3600 | RDT&E | Research, Development, Test, and Evaluation, Air Force							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2012	--	--	--	--	--	--	6.0
2013	--	--	--	--	--	--	32.8
2014	--	--	--	--	--	--	333.6
2015	--	--	--	--	--	--	100.0
2016	--	--	--	--	--	--	150.3
2017	--	--	--	--	--	--	263.3
2018	--	--	--	--	--	--	354.5
2019	--	--	--	--	--	--	457.7
2020	--	--	--	--	--	--	232.0
2021	--	--	--	--	--	--	37.7
2022	--	--	--	--	--	--	21.5
2023	--	--	--	--	--	--	21.9
Subtotal	9	--	--	--	--	--	2011.3

Annual Funding 3600 | RDT&E | Research, Development, Test, and Evaluation, Air Force							
Fiscal Year	Quantity	BY 2014 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2012	--	--	--	--	--	--	6.1
2013	--	--	--	--	--	--	32.9
2014	--	--	--	--	--	--	330.2
2015	--	--	--	--	--	--	98.0
2016	--	--	--	--	--	--	145.2
2017	--	--	--	--	--	--	250.0
2018	--	--	--	--	--	--	331.0
2019	--	--	--	--	--	--	419.7
2020	--	--	--	--	--	--	208.7
2021	--	--	--	--	--	--	33.2
2022	--	--	--	--	--	--	18.6
2023	--	--	--	--	--	--	18.6
Subtotal	9	--	--	--	--	--	1892.2

Annual Funding 3010 | Procurement | Aircraft Procurement, Air Force							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2019	10	525.8	--	--	525.8	154.4	680.2
2020	12	596.0	--	24.6	620.6	288.4	909.0
2021	16	735.1	--	8.4	743.5	271.3	1014.8
2022	13	616.4	--	--	616.4	259.9	876.3
2023	12	587.6	--	--	587.6	259.8	847.4
2024	15	734.0	--	--	734.0	274.9	1008.9
2025	15	751.0	--	--	751.0	210.2	961.2
2026	10	542.4	--	--	542.4	209.7	752.1
Subtotal	103	5088.3	--	33.0	5121.3	1928.6	7049.9

Annual Funding 3010 | Procurement | Aircraft Procurement, Air Force							
Fiscal Year	Quantity	BY 2014 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2019	10	467.8	--	--	467.8	137.4	605.2
2020	12	519.9	--	21.5	541.4	251.6	793.0
2021	16	628.7	--	7.2	635.9	232.0	867.9
2022	13	516.8	--	--	516.8	217.9	734.7
2023	12	483.0	--	--	483.0	213.6	696.6
2024	15	591.5	--	--	591.5	221.6	813.1
2025	15	593.4	--	--	593.4	166.0	759.4
2026	10	420.1	--	--	420.1	162.5	582.6
Subtotal	103	4221.2	--	28.7	4249.9	1602.6	5852.5

Annual Funding 3300 | MILCON | Military Construction, Air Force	
Fiscal Year	TY $M Total Program
2017	7.3
2018	--
2019	5.9
2020	--
2021	4.1
2022	--
2023	--
2024	4.3
2025	16.0
2026	6.3
Subtotal	43.9

Annual Funding 3300 | MILCON | Military Construction, Air Force	
Fiscal Year	BY 2014 $M
	Total Program
2017	6.7
2018	--
2019	5.2
2020	--
2021	3.5
2022	--
2023	--
2024	3.4
2025	12.6
2026	4.9
Subtotal	36.3

Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	6/18/2014	6/18/2014
Approved Quantity	18	18
Reference	Milestone B ADM	Milestone B ADM
Start Year	2019	2019
End Year	2021	2021

The Current Total LRIP Quantity is more than 10% of the total production quantity due to 18 aircraft being the minimum quantity necessary to establish an initial production base for the system as permitted by section 2400 of title 10, United States Code, subsection (b).

The current FY 2019 PB funding supports an LRIP quantity of 22 aircraft. The LRIP quantity will be addressed at the next LRIP decision at Milestone C scheduled for July 2019.

[redacted] Foreign Military Sales

[redacted] Notes
(b)(4)

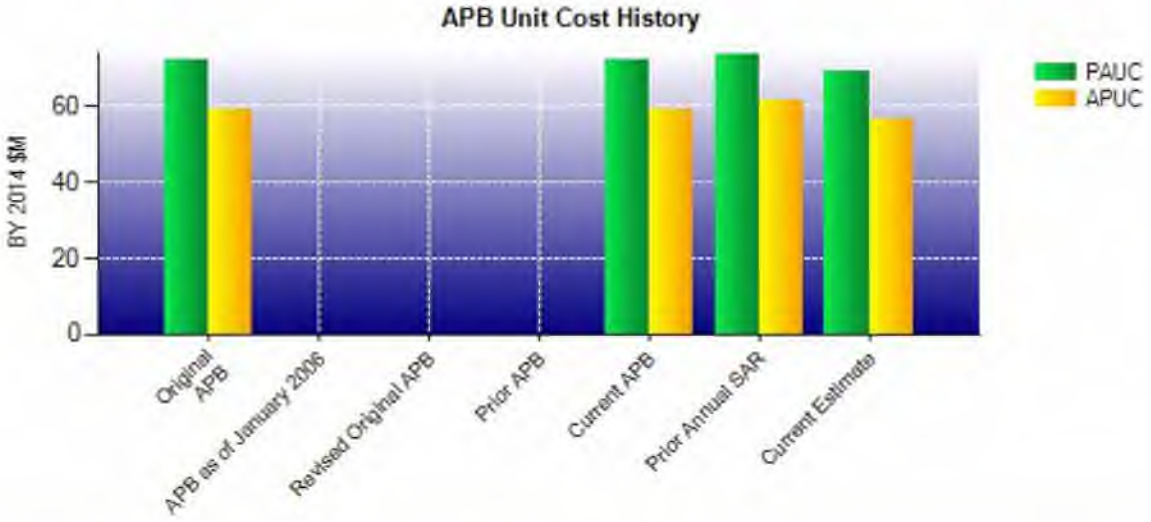
Nuclear Costs

None

Unit Cost

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2014 $M Current UCR Baseline (Jun 2014 APB)	BY 2014 $M Current Estimate (Dec 2017 SAR)	% Change
Program Acquisition Unit Cost			
Cost	8090.9	7781.0	
Quantity	112	112	
Unit Cost	72.240	69.473	-3.83
Average Procurement Unit Cost			
Cost	6108.4	5852.5	
Quantity	103	103	
Unit Cost	59.305	56.820	-4.19

Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2014 $M Original UCR Baseline (Jun 2014 APB)	BY 2014 $M Current Estimate (Dec 2017 SAR)	% Change
Program Acquisition Unit Cost			
Cost	8090.9	7781.0	
Quantity	112	112	
Unit Cost	72.240	69.473	-3.83
Average Procurement Unit Cost			
Cost	6108.4	5852.5	
Quantity	103	103	
Unit Cost	59.305	56.820	-4.19



APB Unit Cost History					
Item	Date	BY 2014 $M		TY $M	
		PAUC	APUC	PAUC	APUC
Original APB	Jun 2014	72.240	59.305	88.002	74.842
APB as of January 2006	N/A	N/A	N/A	N/A	N/A
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	N/A	N/A	N/A	N/A	N/A
Current APB	Jun 2014	72.240	59.305	88.002	74.842
Prior Annual SAR	Dec 2016	73.512	61.473	88.299	76.288
Current Estimate	Dec 2017	69.473	56.820	81.296	68.446

SAR Unit Cost History

Current SAR Baseline to Current Estimate (TY $M)									
PAUC Development Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
88.002	-2.048	0.000	-1.415	0.000	-2.473	0.000	-0.770	-6.706	81.296

Current SAR Baseline to Current Estimate (TY $M)									
Initial APUC Development Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
74.842	-1.823	0.000	-1.397	0.000	-2.339	0.000	-0.837	-6.396	68.446

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	Jun 2014	N/A	Jun 2014
Milestone C	N/A	Oct 2019	N/A	Jul 2019
IOC	N/A	Sep 2020	N/A	Mar 2020
Total Cost (TY $M)	N/A	9856.2	N/A	9105.1
Total Quantity	N/A	112	N/A	112
PAUC	N/A	88.002	N/A	81.296

Required Assets Available is used in lieu of IOC and is defined as delivery of eight production configuration aircraft (four mission & four training) with all required training devices, spares, support equipment, technical manuals, and sustainment support in place to support IOC.

Cost Variance

Summary TY $M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	2118.6	7708.7	28.9	9856.2
Previous Changes				
Economic	-31.2	-137.0	-0.4	-168.6
Quantity	--	--	--	--
Schedule	-14.6	--	--	-14.6
Engineering	--	--	--	--
Estimating	-67.8	+277.9	-1.7	+208.4
Other	--	--	--	--
Support	--	+8.1	--	+8.1
Subtotal	-113.6	+149.0	-2.1	+33.3
Current Changes				
Economic	-9.7	-50.8	-0.3	-60.8
Quantity	--	--	--	--
Schedule	--	-143.9	--	-143.9
Engineering	--	--	--	--
Estimating	+16.0	-518.8	+17.4	-485.4
Other	--	--	--	--
Support	--	-94.3	--	-94.3
Subtotal	+6.3	-807.8	+17.1	-784.4
Total Changes	-107.3	-658.8	+15.0	-751.1
Current Estimate	2011.3	7049.9	43.9	9105.1

Summary BY 2014 $M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	1958.8	6108.4	23.7	8090.9
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	-22.0	--	+0.1	-21.9
Engineering	--	--	--	--
Estimating	-57.6	+219.6	-1.3	+160.7
Other	--	--	--	--
Support	--	+3.7	--	+3.7
Subtotal	-79.6	+223.3	-1.2	+142.5
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+13.0	-432.3	+13.8	-405.5
Other	--	--	--	--
Support	--	-46.9	--	-46.9
Subtotal	+13.0	-479.2	+13.8	-452.4
Total Changes	-66.6	-255.9	+12.6	-309.9
Current Estimate	1892.2	5852.5	36.3	7781.0

Previous Estimate: December 2016

RDT&E	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-9.7
Adjustment for current and prior escalation. (Estimating)	+3.1	+3.3
Revised actual for FY 2017 Budget Authority to pay for Small Business Innovation Research. (Estimating)	-9.5	-10.0
Revised estimate to align with the FY 2019 PB. (Estimating)	+24.8	+28.6
Revised estimate to reflect application of Department-wide inflationary adjustments. (Estimating)	-5.4	-5.9
RDT&E Subtotal	+13.0	+6.3

Procurement	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-50.8
Acceleration of procurement buy profile due to 75-month schedule to 69-month moving LRIP from FY 2020 to FY 2019. (Schedule)	0.0	-143.9
Revised estimate to reflect application of Department-wide inflationary adjustments. (Estimating)	-30.7	-35.8
Revised estimate for decreased labor rates from Defense Contract Management Agency. (Estimating)	-401.6	-483.0
Decrease in Other Support due to changing the Training Work Breakdown Structure estimating methodology from analogous contract costs to actual CRH negotiated Training contract line item. (Support)	-148.9	-205.8
Increase in Initial Spares due to the addition of previously missed RSP kits in initial estimate. (Support)	+102.0	+111.5
Procurement Subtotal	-479.2	-807.8

MILCON	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-0.3
Increase in Nellis Air Force Base square footage and DoD Facilities Pricing Guide rate changes. (Estimating)	+1.8	+2.1
Revised FY 2023 estimate to align with the FY 2019 PB. (Estimating)	-1.8	-2.2
Revised estimate due to Patrick Air Force Base requiring a new building as the original target building is being repurposed. (Estimating)	+3.4	+4.3
Revised estimate due to overall increase in square footage due to larger footprint required for HH-60W trainers. (Estimating)	+10.4	+13.2
MILCON Subtotal	+13.8	+17.1

Contracts

General Notes

Estimated Price at Completion if all CLIN options over 15 years are executed is $7.9B (at target).

Contract Identification

Appropriation: RDT&E
Contract Name: Combat Rescue Helicopter
Contractor: Sikorsky Aircraft Corp.
Contractor Location: 6900 Main Street
Stratford, CT 06614
Contract Number: FA8629-14-C-2403
Contract Type: Fixed Price Incentive(Firm Target) (FPIF), Firm Fixed Price (FFP), Cost Plus Fixed Fee (CPFF)
Award Date: June 26, 2014
Definitization Date: June 26, 2014

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1277.6	1380.0	N/A	1462.2	1621.1	N/A	1536.1	1591.1

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the issuance of sixteen contract modifications covering the following: Contract Data Requirements List (CDRL) changes, changes to Government Furnished Equipment/Information, exercising of three options (two for live fire assets and one for System Demonstration Test Articles (SDTA) Aircraft), the incorporation of other negotiated Contract or Engineering Change Proposals (Airworthiness, Tech Manual Contract Requirements changes, Training Systems Requirements Analysis updates, fire extinguisher requirements, and Fielding Needs Updates), ordering of a Mission Planning System (MPS) study, updating of the Statement of Work for platform specific changes, and issuing an un-definitized change order for the MPS (reflected as a ceiling increase only, until negotiated and definitized).

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2017)	-32.8	-20.9
Previous Cumulative Variances	-19.6	-15.1
Net Change	-13.2	-5.8

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to G&A rates, IPR Program Management Support, and Air Vehicle's Transition Detail Design.

The unfavorable net change in the schedule variance is due to Avionics' LM Intelligence Broadcast System, and Operations' AST-1 Modifications, EMD-2 Structural Modifications, and Air Vehicle's Transition Tool Fabrication..

[redacted] Deliveries and Expenditures

[redacted] Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
(b)(4)				

[redacted] Expended and Appropriated (TY $M)
(b)(4)

The above data is current as of February 12, 2018.

Operating and Support Cost

Cost Estimate Details

Date of Estimate:	August 23, 2017
Source of Estimate:	POE
Quantity to Sustain:	112
Unit of Measure:	Aircraft
Service Life per Unit:	27.00 Years
Fiscal Years in Service:	FY 2020 - FY 2054

Sustainment Strategy

The Product Support Strategy for CRH is 2-level maintenance, organic at both Organizational and Depot levels. The prime contractor, Sikorsky Aircraft Corporation, will develop, implement and maintain an Integrated Logistics Support (ILS) Plan in conjunction with the Program Office.

- Primary Aerospace Vehicle Inventory (PAI): 91
- Mission Capability Goal: 83%
- Materiel Availability Goal: 67.4%
- Mean Time Between Critical Failure Goal: > 28.5 hours
- Mean Time Between Maintenance Goal: > 0.30 hours
- Mean Down Time Goal: > 20.8 hours
- Service Life: 8,000 hour life

Antecedent Information

(As of May 1, 2014)
- HH-60G
- Total Quantity: 97
- PAI: 87
  -- Note: 21 Operational Loss Replacement (OLR) aircraft are not included, currently being acquired. Anticipate additional HH-60G aircraft retirements due to excessive flying hours.
  -- The HH-60Us are not included
- Mission Capability Rate: 73.4%
- Materiel Availability Rate: 57.1%
- Mean Time Between Critical Failure Rate: 15.4 hrs
- Mean Time Between Maintenance Rate: 0.18 hrs
- Mean Down Time Rate: 21.4 hrs

CRH costs shown in comparison to the antecedent system, HH-60G, reflect estimated average annual cost per primary authorized aircraft (PAA). The HH-60G was normalized for comparison to the CRH to reflect programmatic differences and estimating methodologies. The cost per PAA of the HH-60G was projected using Air Force Total Ownership Cost (AFTOC) system historical data. Costs for the HH-60G were normalized to reflect the CRH assumption of 360 annual flying hours per aircraft. This cost comparison excludes Indirect Support costs for the HH-60G antecedent system because the costs captured in the AFTOC database are incomplete and do not provide a meaningful comparison to those estimated for CRH.

Annual O&S Costs BY2014 $M		
Cost Element	**CRH Average Annual Cost Per Aircraft**	**HH-60G (Antecedent) Average Annual Cost Per Aircraft**
Unit-Level Manpower	2.930	3.500
Unit Operations	1.197	1.000
Maintenance	2.337	2.600
Sustaining Support	0.569	0.300
Continuing System Improvements	0.740	0.600
Indirect Support	1.571	--
Other	--	--
Total	9.344	8.000

CRH average annual cost per aircraft assumes full funding of program requirements (unconstrained), whereas the HH-60G reflects projected actual costs reported in the AFTOC system (constrained). Also, the cost of extending the life of the HH-60G is not reflected. The comparison is not adjusted for any capability differences, costs savings or efficiencies that may exist between the two systems.

Item	Total O&S Cost $M			
	CRH			HH-60G (Antecedent)
	Current Development APB Objective/Threshold		Current Estimate	
Base Year	24529.5	26982.5	23674.1	N/A
Then Year	40982.5	N/A	40562.2	N/A

Equation to Translate Annual Cost to Total Cost

The CRH O&S annual unitized cost of $9.34M is calculated based on a steady state PAA fleet of 91 aircraft beginning in FY 2030 and ending in FY 2044.
Total O&S cost includes ramp up (FY 2020-2029), steady state (FY 2030-FY 2044), and ramp down (FY 2045-2054) years.

O&S Cost Variance		
Category	**BY 2014 $M**	**Change Explanations**
Prior SAR Total O&S Estimates - Dec 2016 SAR	25279.2	
Programmatic/Planning Factors	-353.1	Changes in Annual Flying Hours due to revised development and retirement schedule.
Cost Estimating Methodology	-268.1	Software maintenance and indirect support Work Breakdown Structure elements methodology changed with Air Force Cost Analysis Agency provided models.
Cost Data Update	-653.9	AFTOC Updates for Analogous Maintenance data and inflation indices.
Labor Rate	-324.2	Lower composite labor rates (AFI 65-503 tables) and decrease in Sikorsky contractor labor rates due to merger with Lockheed

Energy Rate	-5.8	Decrease in DLA Aviation Fuel Composite Rate
Technical Input	0.0	
Other	0.0	
Total Changes	-1605.1	
Current Estimate	23674.1	

Disposal Estimate Details

Date of Estimate: August 23, 2017

Source of Estimate: POE

Disposal/Demilitarization Total Cost (BY 2014 $M): Total costs for disposal of all Aircraft are 29.3

TY$M: 78.3 (Total Cost)